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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* OLIVIER PINTO

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Appeal 2009-005112  
Application 10/719,698  
Technology Center 1700

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Decided: December 22, 2009

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Before BEVERLY A. FRANKLIN, MICHAEL P. COLAIANNI, and  
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 the final rejection of claims 1-20. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

INTRODUCTION

Appellant describes a flame-retardant cable (Spec 1).

Claim 1 is illustrative:

1. A flame-retardant cable comprising:

a transmission element;

a flammable element; and

a flame-retardant coating layer of cross-linkable resin surrounding said flammable element, wherein said flame-retardant layer includes a polymer obtained from a polymerizable liquid composition, and wherein said polymerizable liquid composition contains at least a precursor for said polymer, the precursor including functional groups selected from the group consisting of acrylates, methacrylates, epoxies, vinyl ethers, allyl ethers, and oxetanes,

wherein said polymerizable liquid composition also includes at least one phosphorous group as an additional precursor such that said phosphorus [*sic phosphorous*] group is chemically bonded to said polymer after polymerization.

The Examiner relies on the following prior art references as evidence of unpatentability:

Ogawa	4,417,018	Nov. 22, 1983
Hall	6,025,422	Feb. 15, 2000
Murphy	US 2003/0133679 A1	Jul. 17, 2003
Hasegawa	6,755,995 B1	Jun. 29, 2004
Sakurai	6,770,820 B2	Aug. 3, 2004

Appellant appeals the following rejections:

1. Claims 1-5, 7, 8, 10, 11, 16, 17, and 20 are rejected under 35 U.S.C. § 102(e) as being anticipated or, alternatively, under 35 U.S.C. §103(a) as being obvious over Murphy.
2. Claims 1-8 are rejected under 35 U.S.C. § 102(e) as being anticipated or, alternatively, under 35 U.S.C. §103(a) as being obvious over Sakurai.

3. Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being obvious over Hasegawa in view of Hall and Ogawa.

With regard to each rejection (1) to (3), Appellant argues the respective claims as a group. Accordingly, we select claim 1 as representative of each group on which to render our Decision.

## ISSUES

### *Rejections (1) and (2)*

Has Appellant shown that the Examiner reversibly erred in finding that Sakurai or Murphy teach or suggest a flame retardant cable having a flame retardant coating layer including a polymer wherein a “phosphorus [*sic phosphorous*] group is chemically bonded to said polymer after polymerization”? We decide this issue in the negative.

### *Rejection (3)*

Has Appellant shown that the Examiner reversibly erred in determining that it would have been obvious to modify Hasegawa’s flame retardant polymer composition with Ogawa’s teaching to include compounds with phosphorous functional groups with polymerizable compositions to improve heat resistance (e.g., flame retardance) of the polymers? We decide this issue in the negative.

## PRINCIPLE OF LAW

The applicant bears the procedural burden of showing error in the Examiner’s rejections. *See, e.g., In re Kahn*, 441 F.3d 977, 985-86 (Fed.

Cir. 2006) (“On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness”) (citation and internal quote omitted).

#### FACTUAL FINDINGS (FF)

We adopt the Examiner’s factual findings on pages 4-7 as our own. We add the following findings primarily for emphasis and completeness.

1. Appellant does not dispute the Examiner’s finding that Murphy teaches flame retardants having additives having both phosphorous groups and reactive functional groups, which upon curing the phosphorous group is chemically bonded to the polymer after polymerization (Ans. 5; Br. 14). Appellant does not dispute the Examiner’s determination that “the skilled artisan would reasonably presume some degree of reaction and bonding of the phosphorus [*sic* phosphorous] group precursor during curing and polymerization of the curable composition” (Ans. 5; Br. 14).
2. Appellant does not dispute the Examiner’s finding that Sakurai teaches flame retardants including “additives having phosphorous groups and methacrylate, which is known in the art to have reactive functional groups” that upon curing the phosphorous group is chemically bonded to the polymer after polymerization (Ans. 6; Br. 15). Appellant does not dispute the Examiner’s determination that “the skilled artisan would reasonably presume some degree of reaction and bonding of the phosphorus [*sic* phosphorous] group precursor during curing and polymerization of the curable composition” (Ans. 6; Br. 15).

3. Appellant does not dispute the Examiner’s reason for combining Hasegawa, Hall, and Ogawa to arrive at the claimed invention (Br. 16-17).
4. Ogawa teaches that the flame retardant composition may be made by “adding and mixing other components before, after or during polymerization when the thermoplastic polymer is being prepared” (col. 9, ll. 18-21). Ogawa discloses that components added to the flame retardant resin composition may include phosphorus compounds (col. 9, ll. 56-67; col. 10, ll. 1-10).

## ANALYSIS

We begin our analysis by construing the claim phrase “chemically bonded.” We note that the polymer feature of claim 1 is claimed in product-by-process format. Claim 1 requires that the phosphorous group is part of a precursor that is added to the polymerizable liquid. In other words, the plain meaning of the claim language “chemically bonded” is that the precursor with the phosphorous group is bonded to the polymer in some manner during the polymerization reaction.

Appellant refers to the Pinto Declaration of record to argue that chemical bonding with the meaning of the claim must be covalent bonding (Br. 13). However, Appellant does not define “chemically bonded” in the Specification and does not otherwise disclose “chemically bonded” as only including covalent bonds. Accordingly, we decline to so limit the meaning of the term. Rather, we construe chemically bonded to include bonding (e.g., ionic, covalent, or hydrogen bonding) a phosphorous group containing compound to the polymer during polymerization.

Regarding rejections (1) and (2), Appellant argues that neither Murphy nor Sakurai teach or suggest that the phosphorous group is chemically bonded to the polymer (Br. 14-15). Appellant further contends that Murphy discloses that the phosphorous group compounds are plasticizers, which does not suggest chemical bonding of the phosphorous group to the polymer (Br. 14). Appellant contends that Sakurai and Murphy merely blend the phosphorous group compound with the polymer, which does not chemically bond the phosphorous group to the polymer (Br. 14-15). Appellant contend that there is no suggestion or teaching in Sakurai that includes a phosphorous group as a precursor for incorporation into the polymer (Br. 15).

However, we are unpersuaded by Appellant's arguments because they fail to address specifically and show reversible error in the Examiner's finding that Murphy and Sakurai teach phosphorous compounds with reactive functional groups that would react so as to bond chemically the phosphorous group to the polymer during curing and polymerization of the curable compositions.

Additionally, Appellant's arguments fail to address the Examiner's reasoned determination that because of the reactive functional groups on the phosphorous compounds some degree of reaction and bonding of the phosphorous group to the polymer would have obviously occurred during curing and polymerization of Murphy's or Sakurai's curable composition. Accordingly, Appellant has not shown error in the Examiner's *prima facie* case of unpatentability under §§ 102(e) or 103(a) over Murphy or Sakurai.

Accordingly, we affirm the Examiner’s §§ 102(e)/103 rejections of claims 1-5, 7, 8, 10, 11, 16, 17, and 20 over Murphy and the §§ 102(e)/103 rejections of claims 1-8 over Sakurai.

Regarding rejection (3), Appellant argues that Ogawa merely blends or adds the mixture containing phosphorous groups to the polymer and does not teach chemically bonding the phosphorous groups to the polymer after polymerization (Br. 16). Appellant contends that even if Hasegawa, Hall, and Ogawa were combined, they do not teach or suggest the phosphorous group is chemically bonded to the polymer after polymerization (Br. 17).

For reasons similar to those noted above with regard to rejections (1) and (2), Appellant’s arguments fail to address the Examiner’s finding that Ogawa teaches a cross-linkable resin obtained from a polymerizable liquid composition that includes phosphorous functional groups that are added to the composition to improve resistance to heat (i.e., that the phosphorous functional groups are bonded during polymerization). Indeed, Ogawa discloses that the “other components” of the composition that include the phosphorous group antioxidantizing agents may be added during the polymerization of the thermoplastic polymer (FF 4). Plainly, one of ordinary skill would have reasonably expected that adding compounds with phosphorous and other functional groups during polymerization of the coating polymer would have chemically bonded the phosphorous group compound to the polymer. Accordingly, Appellant’s arguments are without persuasive merit.

Moreover, Appellant does not dispute the Examiner’s reason for combining Hasegawa, Hall, and Ogawa. Therefore, we affirm the

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Examiner's § 103(a) rejection of claims 1-20 over Hasegawa in view of Hall and Ogawa.

**DECISION**

The Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**ORDER**

**AFFIRMED**

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